Claims

1. Use of a lactic acid producing bacterium for the preparation of a composition for the treatment or prophylaxis of lung dysfunction in a subject, wherein said lactic acid producing bacterium is a bacterium which has a significant beneficial effect on airway narrowing determined by measuring the enhanced pause value (PenH) of a test animal.
2. Use according to claim 1, wherein said lung dysfunction is selected from the group consisting of Chronic Obstructive Pulmonary Disease (COPD), non-allergic asthma, cystic fibrosis, aspiration, endobronchial tumors, endotracheal tumors, lung dysfunction due to non specific inhaled irritants, pulmonary oedema, tracheal stenosis, and vocal cord dysfunction.
3. Use according to claim 1, wherein said lung dysfunction is selected from the group consisting of Chronic Obstructive Pulmonary Disease (COPD), aspiration, lung dysfunction due to non specific inhaled irritants, pulmonary oedema, and tracheal stenosis.
4. Use according to any of the preceding claims, wherein said lactic acid producing bacterium is of the genus *Lactobacillus* or *Bifidobacterium.*
5. Use according to any of the preceding claims, wherein said lactic acid producing bacterium is of the species *Lactobacillus casei.*
6. Use according to any of the preceding claims, wherein said bacterium is strain LMG P-22110 or any strain derived therefrom.
7. Use according to any of the preceding claims, wherein said composition is a medicament, a food or a food supplement.
8. Use according to any one of the preceding claims, wherein said composition further comprises at least one other bacterium having anti-inflammation properties.
9. Use according to any one of preceding claims, wherein said composition further comprises one or more carriers and/or proteins, and/or carbohydrates, and/or lipids and/or anti-oxidants, and is in liquid, powder, solid or capsulated form.
10. Use according to any one of the preceding claims, wherein said composition is suitable for enteral administration.
11. Use according to any one of the preceding claims, wherein said compositions is suitable for nasal administration or inhalation.

12. Use according to any one of the preceding claims, wherein said composition is administered in an effective amount, said effective amount comprising between about 1x 10^6 and about 1x 10^{12} colony forming units, preferably about $1x10^7$ - $1x10^{11}$ colony forming units, more preferably about $1x10^8 - 5x10^{10}$ colony forming units per day, most preferably $1x10^9 - 2x10^{10}$ colony forming units per day or the equivalent in non-viable cells of said bacterium per day.
13. Composition for treatment or prophylaxis of lung dysfunction in a subject, wherein the composition comprises at least one lactic acid producing bacterium having significant beneficial effect on airway narrowing, wherein said significant beneficial effect is determined by measuring the enhanced pause value (PenH) of a test animal.
14. Composition according to claim 13, wherein said lung dysfunction is selected from the group consisting of Chronic Obstructive Pulmonary Disease (COPD), non allergic asthma, cystic fibrosis, aspiration, endobronchial tumors, endotracheal tumors, lung dysfunction due to non specific inhaled irritants, pulmonary oedema, tracheal stenosis, and vocal cord dysfunction.
15. Composition according to claim 13, wherein said lung dysfunctions is selected from the group consisting of Chronic Obstructive Pulmonary Disease (COPD), aspiration, lung dysfunction due to non specific inhaled irritants, pulmonary oedema and tracheal stenosis.
16. Composition according to any one of claims 13-15, wherein said lactic producing acid bacterium is of the genus *Lactobacillus* or *Bifidobacterium*.
17. Composition according to any one of claims 13-16, wherein said lactic acid producing bacterium is of the species *Lactobacillus casei*.
18. Composition according to claim 13-17, wherein said bacterium is strain LMG P-22110 or any strain derived therefrom.
19. Composition according to any one of claims 13-18, further comprising at least one other bacterium having anti-inflammation properties.
20. Composition according to any one of claims 13-19, further comprising one or more carriers and/or proteins and/or carbohydrates and/or lipids and/or anti-oxidants and being in liquid, powder, solid or capsulated form.
21. Bacterial strain LMG P-22110, or any strain derived therefrom.
22. Composition comprising the strain according to claim 21.

23. Composition according to claim 22 being selected from a food, a food supplement or a medicament.

24. A container comprising a composition according to any one of claims 13-20, 22 or 23.

25. A method for preparing a composition for the treatment or prophylaxis of airway hyper-responsiveness and/or airway resistance in a subject, said method comprising testing the effect of lactic acid producing bacteria on airway hyper-responsiveness and /or increased airway resistance by measuring the PenH of test animals, selecting a bacterial strain which has a significant beneficial effect on airway hyperresponsiveness and/or increased airway resistance in said test animals or human subjects, growing said selected strain and formulating said grown strain so that it becomes suitable for administration to a subject.

26. Use of probiotic lactic acid bacteria for the preparation of a medicament for treating or preventing Chronic Obstructive Pulmonary Disease (COPD) in a subject.

27. Use according to claim 26, wherein said lactic acid bacteria are dead or non-viable.